

REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested.

Claims 10 and 28 have been amended to clarify that the controller or step of causing the coast downshift to be carried out while the vehicle is kept in a minimal driving state in fact causes the coast downshift to be carried out while the vehicle is kept in a *predetermined* minimal driving state in which the engine speed is higher than an input shaft speed of the automatic transmission *by a predetermined amount*. Support for this is found, for example, in Figure 9 which illustrates an example of a predetermined amount of increase of the engine speed in the minimal driving state according to the present invention, so that the minimal driving state is predetermined. New Claims 38-39 correspond to Claims 10 and 38 but further recite calculating a predetermined amount of increase of an engine speed. Basis for this is found at steps SA4-SA5 in Fig. 11.

It is known to cause an automatic transmission to shift down during coasting of the vehicle. Conventionally, this has required precise timing of the release of a friction element and the engagement of another friction element, in the case of a clutch-to-clutch downshift, in order to minimize the shift shock (paragraph [0004]). According to the invention, on the other hand, by keeping the vehicle in a minimal driving state in which the engine speed is higher than the input shaft of the automatic transmission during a coast downshift, the hydraulic pressure applied to the friction elements associated with the downshift can be controlled with higher accuracy owing to reduced torque variation and sufficient robustness with respect to disturbances, such as braking of the vehicle, can be achieved without requiring a high accuracy control apparatus (paragraph [0007]). For example, in accordance with the non-limiting embodiment of the figures, the ISC valve 54 can be controlled to provide a *predetermined* engine speed (N_E) increase related to the amount of slip of the torque converter N_{SLIPAV} (paragraphs [0046] and [0049]). For example, if a clutch-to-clutch

downshift is detected at step SA3 (Figure 11), an increase in N_E is calculated at steps SA4-SA5 and the ISC valve is driven to achieve the N_E increase (steps SA7 and SA9). The minimal driving state is thus a *predetermined* minimal driving state in which an engine speed is higher than an input shaft speed of the automatic transmission by a *predetermined* amount.

Claims 10 and 28 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. patent 6,346,063 (Kondo et al). The Examiner there relied upon the description at lines 58-65 of column 28 in the reference to teach the limitations of the rejected claims. However, Applicants respectfully submit that the amended Claims 10 and 28 clearly define over this reference.

The noted portion of Kondo et al describes that during a coasting downshift the input shaft speed N_{CO} is increased from the synchronizing speed N_{outx3} for the third gear to smoothly approach the synchronizing speed N_{outx2} for the second gear. As seen in Figures 17-18, this involves a so-called “overshoot engagement” of the brake B3 in which the brake B3 is controlled such that the input shaft speed N_{CO} is first raised above the second gear synchronizing speed N_{outx2} (above the dashed line in the figures) and then allowed to fall to the synchronizing speed N_{outx2} (see also col. 25, lines 45-54). It is evidently this overshoot of N_{CO} which the Examiner considers to be evidence of a “minimal driving state.”

However Applicants respectfully submit that the overshoot of N_{CO} in Figs. 17-18 of Kondo et al is not evidence of a predetermined minimal driving state in which an engine speed is higher than an input shaft speed of the automatic transmission by a predetermined amount. First, N_{CO} is not the engine speed but the speed of the transmission input shaft, and so can differ from the engine speed by the slip amount in the torque converter. Thus the overshoot shown in Figs. 17-18 is not evidence of an engine speed being higher than an input shaft speed of the automatic transmission but is simply evidence of the input shaft speed itself momentarily exceeding the second gear synchronizing speed. In any case, the overshoot

amount in Kondo et al is not a "predetermined" amount but can vary depending on the rate of engagement of the brake B3, which can itself vary in an uncontrolled manner in dependence of factors such as the amount of brake wear and the operating fluid temperature and viscosity. Thus the variable overshoot in Figs. 17-18 is not predetermined, and so is not evidence of a "predetermined" minimal driving state in which an engine speed is higher than an input shaft speed of the automatic transmission by a "predetermined" amount.

Moreover, the overshoot in Kondo et al is not calculated and so there is no evidence in Kondo et al of calculating a predetermined amount of increase of an engine speed, as is recited in new Claims 38-39.

Claims 16 and 32 were rejected under 35 U.S.C. § 103 as being obvious over Kondo et al in view of U.S. patent 5,131,294 (Yoshimura) which was cited for the further teaching of a learning controller that corrects, by learning, the hydraulic pressure for at least one friction element during the shifting. However, whatever teaching Yoshimura may have in this respect, it provides no teaching for overcoming the failure of Kondo et al to teach a predetermined minimal driving state. Therefore, since Claims 11-15, 17-22, 29-31 and 33-37 have been allowed, and since amended Claims 10, 16, 28 and 32 define over the prior art as set forth above, all of the claims are believed to be patentable over the prior art.

The specification has been amended as required in paragraph 2 of the Office Action.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

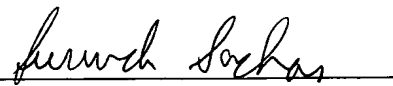
Respectfully submitted,

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